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***Schistura* (Teleostei: Nemacheilidae) in the Mae Klong basin in southwestern Thailand with description of a new species**

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Abstract

Recent fieldwork has revealed the presence of six species of *Schistura* McClelland 1838 in the Mae Klong basin in southwestern Thailand. These include *S. sexcauda* (Fowler 1937), *S. balteata* (Rendahl 1948), *S. mahneri* Kottelat 1990, the recently described *S. aurantiaca* Plongsesthee *et al.* 2011 and *S. tenebrosa* Kangrang *et al.* 2012, and a newly discovered species described herein. *Schistura sexcauda* previously was the only *Schistura* species known in the Mae Klong, and it was mis-identified as *S. desmotes* (Fowler 1934). *Schistura pantherina*, n. sp., is easily distinguished from all other species of *Schistura* by its distinctive color pattern. It appears to be endemic to the Mae Nam Kwai Noi system.

Key words: Pisces, Cypriniformes, *Schistura sexcauda*, *Schistura desmotes*

Introduction

In his treatise on Indochinese nemacheilids, Kottelat (1990) recorded only one species of *Schistura* from the Mae Klong basin in southwestern Thailand and referred to it as *Schistura desmotes*. Recent collections from the basin have included *Schistura mahneri*, which is widely distributed in the basin, *Schistura balteata*, apparently restricted in Thailand to the Pakkok River of the Mae Nam Kwai Noi system, and two recently discovered and described species, *Schistura aurantiaca*, also widely distributed in the basin, and *Schistura tenebrosa*, found only in a small region drained by the Pakkok River of the Mae Nam Kwai Noi system (Plongsesthee *et al.* 2011; Kangrang *et al.* 2012). A sixth species, discovered in 2011, is described herein. Re-examination of specimens examined by Kottelat (1990) and of many more recently collected specimens indicate that the species in the Mae Klong previously referred to as *S. desmotes* is *Schistura sexcauda*.

Methods

Fishes were captured throughout the basin with a Smith-Root (Vancouver, WA, U.S.A.), model 15D electrofisher, minnow seines, and dipnets. After capture, specimens were killed by an overdose of methane tricaine sulfonate (>150 mg/l) and preserved, first in 10% formalin for 7 days and then in 70% ethanol for permanent preservation.

Measurements and meristic counts, including counts of pores in the lateralis system, followed Kottelat (1990). Measurements were made point-to-point with dial calipers to the nearest 0.1 mm. Photographs were taken of live and freshly preserved specimens in the field using a Nikon COOLPIX P5100 camera and of preserved specimens using a Visionary Digital (Palmyra, Virginia) with Canon 40D and 5D cameras at the Florida Museum of Natural History. Specimens examined are from The Academy of Natural Sciences of Drexel University (ANSP),

University of Florida (UF), National Inland Fisheries Institute, Bangkok (NIFI), National Museum of Natural History, Washington (USNM), and Zoological Reference Collection, National University of Singapore (ZRC).



FIGURE 1. *Schistura pantherina*. (A) holotype, NIFI 4675, 60.2 mm SL; dorsal, ventral and lateral views. (B) paratype, UF 184183, 31.0 mm SL, lateral view. Scale bars = 10 mm.

***Schistura pantherina*, Page, Plongsesthee and Randall
(Figs. 1–3)**

Holotype. NIFI 4675, 60.2 mm SL; Thailand, Kanchanaburi Prov., Thong Pha Phum, Mae Khlong basin, Mae Nam Kwai Noi system, Kroeng Krawia, on Hwy 323 at km 32, near Prang Phe, 14°58'17"N, 98°38'24"E, 24 Apr. 2011, Rungtip Plongsesthee, F. William H. Beamish, Larry M. Page and Randal A. Singer.

Paratypes. UF 184183, 26.7–42.0 mm SL, Thailand, Kanchanaburi Prov., Thong Pha Phum, Mae Khlong basin, Mae Nam Kwai Noi system, Kroeng Krawia, on Hwy 323, 14°55'N, 98°40"E, 22 Feb. 2012, Rungtip Plongsesthee and Raphael Lagarde.

Diagnosis. Member of genus *Schistura* as defined by Kottelat (1990). Distinguished from all other species of *Schistura* by unique color pattern consisting of 11–16 black spots along mid-side, black spots on top of head and predorsal area continuing as a row of spots to the caudal base, and a short vertical black bar at the caudal-fin base. It is further distinguished from similar species by the following combination of characters: no black suborbital bar; lateral line extending almost to caudal fin; dorsal-fin rays iv, 8½; anal-fin rays iii, 5½; pectoral-fin rays i, 10; pelvic-fin rays i, 7; and caudal fin with 9 branched rays in upper half, 8 branched rays in lower half.



FIGURE 2. Photograph of live *Schistura pantherina*, holotype, NIFI 4675, 60.2 mm SL. Scale bar = 10 mm.

TABLE 1. Morphometric values for *Schistura pantherina* and *S. xhatensis* (ZRC 45388, holotype).

	<i>S. pantherina</i> holotype	<i>S. pantherina</i> paratypes range (N=5)	<i>S. pantherina</i> paratypes mean±SD	<i>S. xhatensis</i> holotype
Standard length, mm	60.2	26.7–42.0	31.8±5.91	33.0
%SL				
Predorsal length	53.5	48.4–54.0	50.5±2.08	56.1
Lateral head length	26.1	25.2–27.4	26.6 ±1.13	24.2
Head width	14.1	11.3–12.7	12.1±0.57	14.8
Snout length	10.6	8.2–9.3	8.8±0.42	8.8
Prepelvic length	47.7	48.6–51.0	50.4±1.00	53.9
Preanal length	78.7	69.2–77.4	73.4±3.38	77.6
Body depth at dorsal origin	13.1	11.6–14.7	12.7±1.33	12.7
Body width at dorsal origin	9.9	7.1–9.3	8.1±0.90	10.3
Caudal-peduncle depth	10.5	8.2–11.4	9.5±1.25	11.8
Caudal-peduncle length	12.3	13.9–16.7	15.0±1.21	14.2
Pectoral-fin length	20.4	21.0–24.8	23.1±1.82	19.1
Pelvic-fin length	19.6	17.6–20.2	19.8±1.45	15.8
%HL				
Eye diameter	15.9	16.7–24.3	21.0±3.14	13.7
Interorbital width	22.3	13.2–18.9	17.1±2.36	25.0

Description. Body shape and color are shown in Figures 1–3. Morphometric data are in Table 1. Largest specimen is the holotype, 60.2 mm SL, 74.7 mm TL.

Body long, slender, slightly deeper than wide. Body depth fairly uniform throughout, slightly deeper at dorsal-fin origin than at caudal peduncle. Profile of snout and head pointed, more so in juveniles. Snout moderately pointed in dorsal view. Head depressed; eye oval, longer than high, near dorsal profile, directed dorsolaterally. Dorsal-fin origin above pelvic-fin origin. Pectoral fin reaches over half distance from pectoral-fin origin to pelvic-fin origin. Pelvic fin reaches anus. Axillary pelvic lobe present. Anal fin not reaching caudal fin. Margins of dorsal and anal fins convex. Caudal fin emarginate. Small adipose crest on dorsal margin, none or very small crest on ventral margin, of caudal peduncle; dorsal crest more pronounced on juvenile. No suborbital flap; no apparent sexual dimorphism.

Body scaled, except scales absent on venter anterior to pelvic fin. Scales embedded on anterior side of body, becoming less so near vertical from origin of dorsal fin. Scales embedded on venter between pelvic fins and anus. Scales on anterior part of body deeply embedded; lateral line complete nearly to caudal fin with about 115 scales and 90 pores on holotype; 82 scales around narrowest part of caudal peduncle on holotype. Dorsal-fin rays iv, 8½; anal-fin rays iii, 5½; pectoral-fin rays i, 10; pelvic-fin rays i, 7; caudal fin with 9 branched rays in upper half, 8 branched rays in lower half.

Cephalic lateralis system (pores countable on two specimens) with 4 + 8 supraorbital pores, 8 infraorbital pores, 8–9 preoperculomandibular, and 3 supratemporal pores. Lips moderately thick, pleated, covered with unculi; upper lip with very small median incision; lower lip with median notch in small individuals, with median incision in larger individuals (Fig. 3). Processus dentiformis present. Inner rostral barbel almost reaching to corner of mouth; outer rostral barbel reaching horizontally to anterior edge of orbit. Maxillary barbel reaching horizontally to or slightly past posterior edge of orbit. Barbels covered with unculi. Anterior nostril at base of short flap.

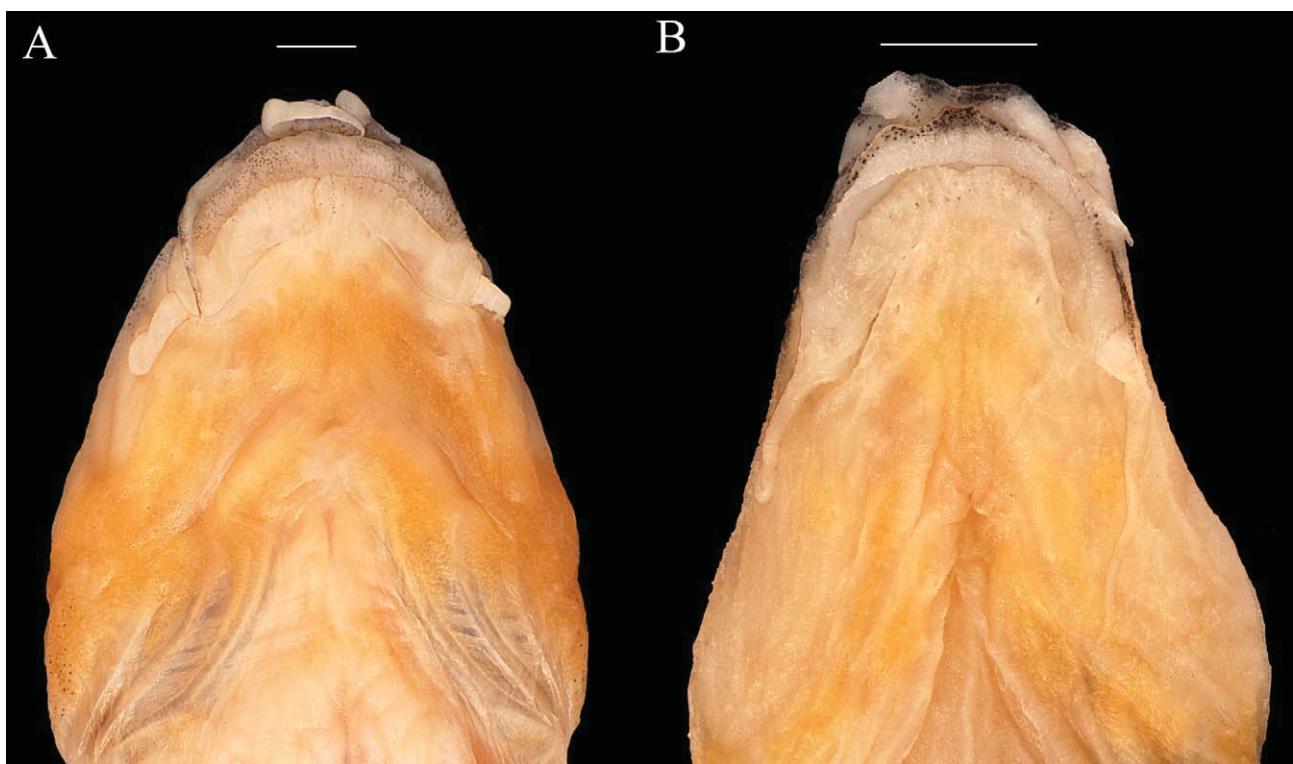


FIGURE 3. Mouth of *Schistura pantherina*, (A) holotype, NIFI 4675, 60.2 mm SL. (B) paratype, UF 184183, 31.0 mm SL. Note more deeply notched lips in smaller specimen. Barbels damaged on both specimens. Scale bars = 2 mm.

Coloration. In life (Fig. 2), *Schistura pantherina* has a row of 11–16 greenish-black spots or blotches along the side. In larger individuals, the first few and the last few are confluent, and all spots are overlain by a dusky silver-gray stripe. In smaller individuals, the stripe is darker and the spots are less obvious. The midlateral row of spots is followed by a medial to slightly submedial black basicaudal bar that spans approximately 6–11 rays.

Greenish-black spots and vermiculations on top of the head and predorsal area continue as a row of spots to the caudal base. The predorsal area immediately in front of the dorsal fin and the first dorsal ray are tinged with red.

The upper half of the head is yellow-green, the lower half is yellow-white. There is a diffuse preorbital bar but no black suborbital bar. The lower side of the body and venter are yellow-white and lack dark pigment. The dorsal fin has a sub-basal row of black spots, one on each ray, followed distally by a clear area that is deeper at the front of the fin than at the rear, then by two more rows of smaller black spots along the rays. The distal one-fourth of the fin is clear. The caudal fin has a red tinge along the upper- and lower-most rays and two faint bars formed by rows of small brown to black spots. The pectoral and pelvic fins are suffused with red and yellow; the anal fin is clear.

The smallest individuals examined (32.1–38.2 mm SL) have the pattern of the largest individual except the midlateral black stripe is more pronounced, the dorsal and lateral blotches are smaller and lighter in color, and the fins lack the red and yellow pigments.

In preserved specimens, the greenish aspect of the black spots and blotches, and the red and yellow pigments on the fins are absent. The dark spots, especially those on the dorsum are more brown than black.

Etymology. The name, *pantherina*, Latin adjective meaning 'like a panther,' is in reference to the spotted pattern on the dorsum and sides of some members of the felid genus *Panthera*.

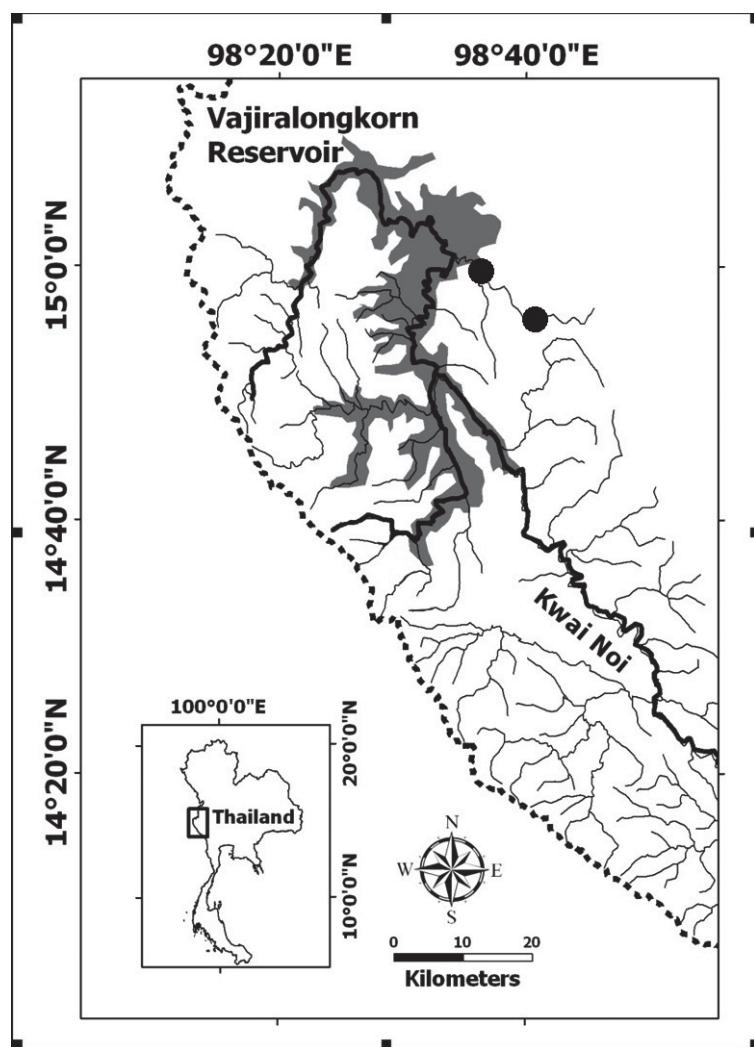


FIGURE 4. Distribution of *Schistura pantherina*. Black dots represent the only known localities.

Distribution and ecological notes. *Schistura pantherina* is known only from the Kroeng Krawia, Kwai Noi, Mae Khlong basin, in the Thong Pha Phum District of Kanchanaburi Province, Thailand (Fig. 4). Specimens were captured in flowing water in shallow rubble and gravel riffles (Fig. 5). This is the second species of *Schistura* that appears to be endemic to this basin, the other being *S. tenebrosa* (Kangrang *et al.* 2012).

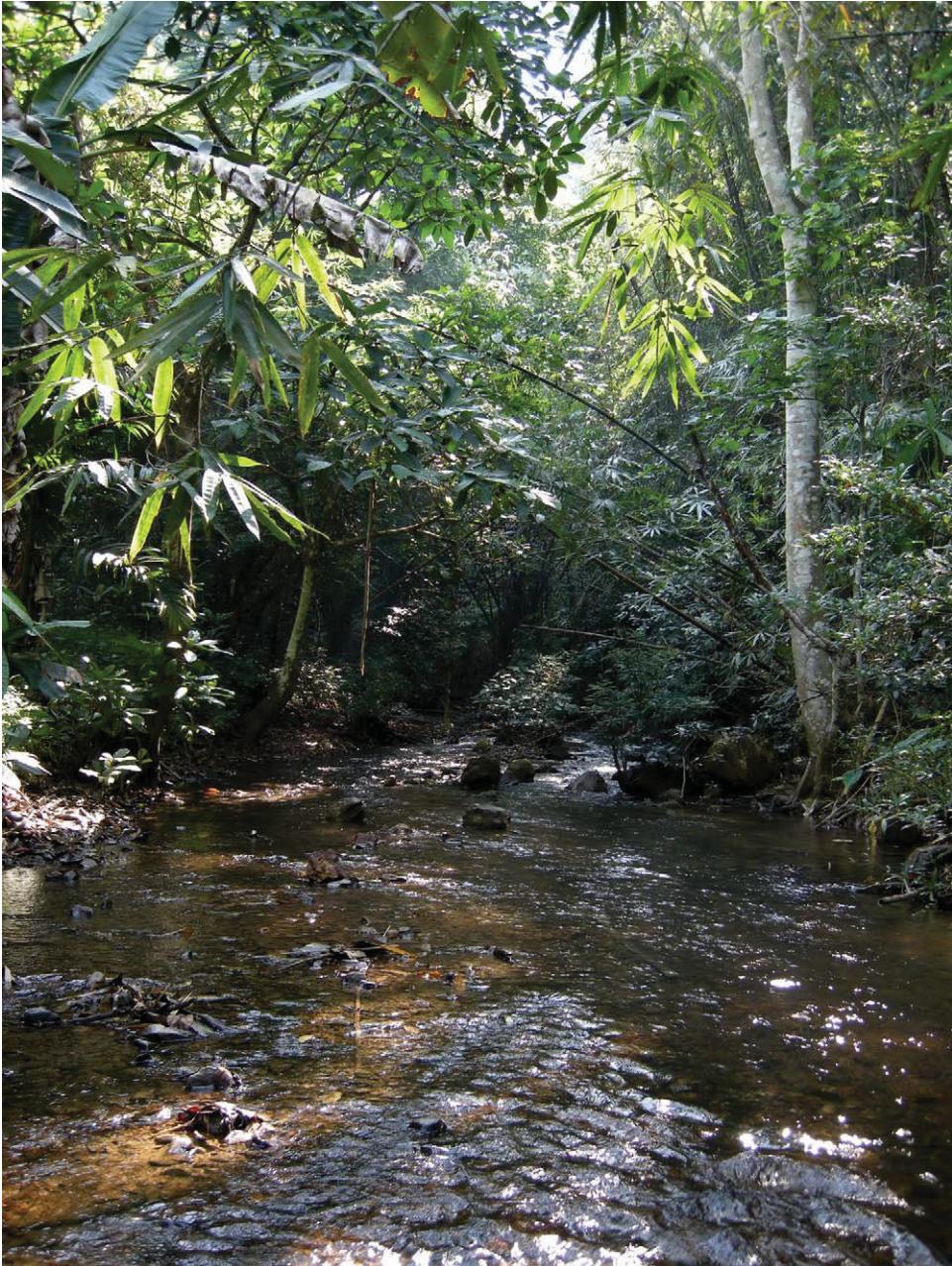


FIGURE 5. Habitat of *Schistura pantherina*. Thailand, Kanchanaburi Prov., Thong Pha Phum, Mae Khlong basin, Mae Nam Kwai Noi system, Kroeng Krawia, on Hwy 323, 14°55'N, 98°40'E, 22 Feb. 2012.

Discussion

The only species of *Schistura* currently known with a color pattern similar to that of *S. pantherina* is *S. xhatensis* Kottelat 2000 from the Nam Xhat, Nam Khan basin, Laos. Based on the brief original description (Kottelat 2000) and examination of the holotype (Table 1) and paratype, *S. xhatensis* has an elongate body, the origin of the dorsal fin above the origin of the pelvic fin, a shallow median notch in the upper lip, and a mid-lateral row of 12–15 vertically elongated blotches—with those on the anterior half of the body fused—and all overlain with a dusky stripe that is slightly less deep than the blotches. On the dorsum are variously fused dark spots and blotches, in two or three rows predorsally and a single row on the caudal peduncle; some predorsal spots have a light center. A black basicaudal bar spans most of the depth of the caudal peduncle, but does not reach the dorsal or ventral surfaces. There is a black preorbital bar, and a black blotch at the origin of the dorsal fin is followed by a smaller red spot. The lateral line is incomplete, ending above the anal fin. Dorsal-fin rays iv, 8½; anal-fin rays iii, 5½;

pectoral-fin rays i, 8–9; pelvic-fin rays i, 5–6; caudal fin: 9 branched rays in upper half, 8 branched rays in lower half. Axillary pelvic lobe present. No suborbital flap.

Schistura pantherina differs from *S. xhatensis* in having shorter black spots/blotches along the side of the body and a much shorter vertical black basicaudal bar that spans only the medial rays; in *S. xhatensis*, the basicaudal bar spans all but the upper-most and lower-most rays. *Schistura xhatensis* has a conspicuous black blotch at the dorsal-fin origin followed by a smaller red spot, which *S. pantherina* lacks. *Schistura pantherina* also differs from *S. xhatensis* in having a complete (vs. incomplete) lateral line, a shorter prepelvic length (48–51% vs. 54% SL), 11 pectoral rays (vs. 9–10), and 8 pelvic rays (vs. 6 or 7).

Schistura pantherina is sympatric in the Mae Khlong basin with *S. aurantica*, *S. balteata* (Fig. 6), *S. mahnerti*, *S. sexcauda*, and *S. tenebrosa*, but is easily distinguished from all of these species by its distinctive color pattern and more elongate body.



FIGURE 6. *Schistura balteata*: UF 123456, 53.3 mm SL, Thailand, Kanchanaburi Province, Kwai Noi River system, Pakkok River, 14°39'57"N, 98°23'23"E, 4 Dec. 2009.

Kottelat (1990) referred to the only species of *Schistura* known to him from the Mae Khlong basin as *S. desmotes*. *Schistura desmotes* was originally described from the Ping River basin, Chiang Mai, Thailand. It is distinguished from similar species by the combination of 7–9 dark bars on the side, an axillary pelvic fin-lobe, lateral line extending nearly to the caudal fin, 8½ branched dorsal-fin rays, 9 upper and 8 lower branched caudal-fin rays, an uninterrupted black basicaudal bar, and a suborbital flap in the adult male. A superficially similar population in the Mae Nam Kwai Noi (Mae Khlong basin) was identified as *S. desmotes* by Kottelat (1990), who noted that the specimens “cannot be differentiated from those of the upper Mae Nam Ping except by a generally lighter background coloration and slightly thinner bars which also are more numerous in the postdorsal area (modally 4, vs 3).” However, the population in the Mae Nam Kwai Noi lacks the suborbital flap present in *S. desmotes* and is distinguished by its color pattern as described below.

Other species of *Schistura* similar in morphology to the population in the Mae Khlong include *S. similis* Kottealt 1990 in the Mae Nam Moei in the Salween basin in Mynamar and western Thailand just northwest of the Mae Khlong basin, and *S. sexcauda* in the Chao Phraya basin in the central Plain of Thailand just north of the Mae Khlong basin. The Mae Nam Kwai Noi population, *S. similis*, and *S. sexcauda* all have usually 7–9 dark brown to black bars on the side, an axillary pelvic-fin lobe, a complete or nearly complete lateral line, 8½ branched dorsal-fin rays, 9 upper and 8 lower branched caudal-fin rays, an uninterrupted black basicaudal bar, and no suborbital flap.

Schistura similis was distinguished by Kottelat (1990) from all other species of *Schistura* by the presence of a large and separate posterior chamber of the gas bladder, and further distinguished from *S. sexcauda* by a slightly shorter caudal peduncle and the width and shape of the dark bars on the body. On *S. similis* the bars are regular in shape throughout the length of the body and wider than the interspaces. On *S. sexcauda*, the bars are less regular, being wider predorsally and slightly narrower on the caudal peduncle. The dark bars on the caudal peduncle reach the ventral surface in *S. sexcauda*, but terminate on the lower side in *S. similis*. Most distinctively, many individuals of *S. sexcauda*, including the holotype (Fig. 7A), have a light bar immediately behind the head and dark chevrons along the lateral line on the posterior half of the body. Neither of these characteristics is present in *S. similis*. The population of *Schistura* in the Mae Khlong has a light bar immediately behind the head and dark chevrons along the lateral line on the posterior half of the body, and otherwise is assignable to *S. sexcauda*.



FIGURE 7. *Schistura sexcauda*: (A) ANSP 68007, holotype, 93.4 mm SL, Thailand, Me Poon, 17°40'N, 99°42'E, 1936; (B) UF 181155, 51.2 mm SL, Kanchanaburi Province, Kwai Noi River system, Pakkok River system, Ban Huay Pousa, 14°38' 0"N, 98°48' 0"E, 20 Apr. 2011; (C) UF 181155, 43.1 mm SL, same locality as B. *Schistura desmotus*: (D) UF 183066, 42.8 mm SL, Thailand, Chiang Mai Province, Ping River. Scale bars = 30 mm.

In addition to the absence of a suborbital flap, *S. sexcauda* in the Mae Khlong differs from *S. desmotus* by usually having a lighter background color and thinner bars on the side of the body, as Kottelat (1990) noted. It also differs in having the distinctive dark chevrons on the posterior half of the body; chevrons are absent on *S. desmotus* (Fig. 7D).

Schistura sexcauda is the most widespread and common species of *Schistura* in the Mae Khlong basin and, prior to recent fieldwork, was the only species recorded from the basin. Recent descriptions of the newly discovered *S. aurantiaca*, *S. tenebrosa* and *S. pantherina* illustrate how poorly known are the fishes of this basin. Ongoing taxonomic studies on other groups of fishes in the basin also are showing a higher diversity and endemicity than has been recognized and perhaps will lead to efforts to maintain and protect the ecological integrity of the streams. Other than dams on some main stems of the basin and local evidence of pollution related to agriculture, human influence has not been nearly as detrimental in the basin as it has been in other regions of Thailand.

Comparative material examined (mm SL)

Schistura aurantiaca: THAILAND: MAE KHLONG BASIN: KANCHANABURI PROV.: UF 178532, holotype, 36.3 mm, Thong Pha Phum, Kwai Noi River system, Khayeng River at Route 3272 bridge, 14°39'35"N, 98°32'01"E, 3 Jan. 2010. UF 176400, 2 ex., paratypes, 32.0–40.8 mm, same data as UF 178532. UF 178529, 1 ex., 35.9 mm, Khayeng River, 14°33'22"N, 98°34'20"E, 6 Jun. 2010. NIFI 3972, 2 ex., 35.9–35.9 mm, same data as UF 178529. USNM 398673, 2 ex., 35.8–40.0 mm, same data as UF 178529. ZRC 52053, 2 ex., 25.8–34.5 mm, same data as UF 178529. UF 173048, 2 ex., 29.6–37.0 mm; Kwai Noi River, stream near km 32 on Route 323, 14°58'17"N, 98°38'24"E, 12 Jun. 2008. UF 173049, 1 ex., 31.8 mm; Lin Tin River, Route 323 at km 95, near Sai Yok, 14°33'44"N, 98°47'16"E, 12 Jun. 2008. UF 176388, 6 ex., 20.1–32.9 mm; Kring Ta Ko River, 14°45'10"N, 98°30'02"E, 2 Jan. 2010. UF 176447, 4 ex., 24.3–30.3 mm; Ban Rai River, near Tong Pha Phum, 14°43'10"N, 98°30'21"E, 2 Jan. 2010. UF 176461, 1 ex., 27.3 mm; Lin Tin River, Route 323 at km 95, 14°32'16"N, 98°47'16"E, 1 Jan. 2010. UF 176575, 1 ex., 21.0 mm; Ban Rai River, near Tong Pha Phum, 14°42'49"N, 98°31'26"E, 2 Jan. 2010. Burapha Univ. uncat., 15 ex., 31.9–39.5 mm; Khayeng River, 14°33'22"N, 98°34'20"E, 22 Apr. 2010. Burapha Univ. uncat., 10 ex., 31.3–39.7 mm; Khayeng River, 14°33'22"N, 98°34'20"E, 25 Apr. 2010.

Schistura balteata: THAILAND: MAE KHLONG BASIN: KANCHANABURI PROV.: UF 184798, 53.3 mm; Thong Pha Phum, Mae Khlong basin, Kwai Noi River system, Pakkok River, 14°39'57"N, 98°23'23"E, 4 Dec. 2009.

Schistura desmotes: THAILAND: PING RIVER BASIN: CHIANG MAI PROV: ANSP 60082, 22.1 mm, holotype, Chiang Mai, 3 Jan. 1933; ANSP 60083, 1 ex., 19.6 mm, paratype, same data as ANSP 60082; ANSP 60084, 1 ex., 17.9 mm, same data as ANSP 60082; ANSP 56830, 1 ex., 21.6 mm, Me Nam Ping, 450 mi. N Bangkok, 75 mi. E Karen, Burma, 2 Jan. 1933; ANSP 56831, 1 ex., 19.3 mm, same data as ANSP 56830; ANSP 60081, 1 ex., 16.1 mm, same data as ANSP 56830; USNM 295777, 8 ex., 40.2–44.9 mm, Me Nam Ping near Chiang Dao, 19.343°N, 98.975°E, 26 Apr. 1973. UF 183066, 10 ex. (of 16), 26.1–53.2 mm, Mae Nam Ping, on Hwy 7 at km 62, 19.286°N, 98.690°E, 25 Jan. 2012.

Schistura mahnerti: THAILAND: SALWEEN RIVER BASIN: MAE HONG SON PROV.: NIFI 855, 1 paratype, 44.4 mm; Mae Sahm Leap, Amphoe Mae Sariang; 22 Jan. 1981. NIFI 864, 15 paratypes, 17.5–56.4 mm; Mae Sariang River, Mae Sariang District, Amphoe Mae Sariang; 29 May 1978. TAK PROV.: NIFI 876, 8 paratypes, 24.8–28.0 mm; Moei River, Ban Huai Pong, Amphoe Tha Song Yang; 10 Jun. 1981. USNM 288462, 6 paratypes, 21.5–55.6 mm; mountain stream, 5 km W Mae Sariang, 29 Apr. 1973. MAE KHLONG BASIN: KANCHANABURI PROV.: NIFI 3056, 10 (of 14) ex., 32.3–54.8 mm; Thung Yai Naresuan Wildlife Conservation Area; 4 Apr. 1996. NIFI 3082, 48 ex., 32.7–65.5 mm; near Mae Khamin Waterfall; 4–5 Jan. 1998. UF 178531, 6 ex., 48.5–58.7 mm; Khayeng River, near Tong Pha Phum, 14°33'22"N, 98°34'20"E, 25 May 2010. GULF OF THAILAND BASIN: PRACHUAP KHIRI KHAN PROV.: UF 178530, 4 ex., 53.1–74.0 mm; Bang Sapan, 11°14'24"N, 99°21'27"E, 25 May 2010.

Schistura sexcauda: THAILAND: MAE NAM YOM BASIN: ANSP 68007, holotype, Me Poon, 93.3 mm; 17°40'N, 99°42'E, 1936. ANSP 88046, same locality as ANSP 68007, 10 ex., 21.9–40.0 mm, 1936. MAE NAM PING BASIN: TAK PROV.: NIFI 878, 1 ex., 61.3 mm; Huei Ban Na, Bhumbipol Dam; 20 Nov. 1973. NIFI 2185, 2 ex., 33.3–35.3 mm; Nam Tok Lansang, 16°46'N, 99°01'E, Lansang National Park, Amphoe Muang, Sep. 1978. MAE KHLONG BASIN: KANCHANABURI PROV.: UF 176413, 3 ex., 26.5–34.0 mm; Kwai Noi River, Khayeng River, Hwy 3272 bridge, 14°39'35"N, 98°32'01"E, 3 Jan. 2010. UF 182095, 30 ex., 29.3–57.2 mm; Kwai Noi River, Khayeng River, Hwy 3272 bridge, 14°33'22"N, 98°34'20"E, 27 Oct. 2010. UF 181084, 16 ex., 30.1–50.5 mm; same locality as UF 182095, 25 Apr. 2011. UF 181155, 7 ex., 32.9–55.0 mm; Kwai Noi River system, Pakkok River system, Ban Huay Pousa, 14°38' 0"N, 98°48' 0"E, 20 Apr. 2011. Uncatalogued, Burapha

Univ., 10 ex., 40.1–58.9 mm; same locality as UF 182095, 6 Jun. 2010. Uncatalogued, Burapha Univ., 10 ex., 45.5–56.2 mm; same locality as UF 182095, 30 Dec. 2010. USNM 295767, 13 ex., 21.0–27.0 mm; Kwai Noi River between Kanchanaburi and Sai Yok, 13–14 Apr. 1973.

Schistura similis: MYANMAR: SALWEEN BASIN: SHAN STATE: USNM 384863, 1 ex., 50.3 mm; Dote Hta Waddy River, Pen Long, 22°42'11"N, 97°31'41"E, 23 Mar. 2003.

Schistura tenebrosa: THAILAND: MAE KHLONG BASIN: KANCHANABURI PROV.: UF 181417, holotype, 45.1 mm; Thong Pha Phum, Mae Khlong basin, Kwai Noi River system, Pakkok River, 14°36'22"N, 98°28'14"E, 5 Dec. 2009. UF 181418, 10 paratypes, 33.2–46.0 mm; NIFI 4415, 3 paratypes, 43.6–45.4 mm; USNM 400923, 3 paratypes, 37.4–42.5 mm; ZRC 53100, 3 paratypes, 39.0–45.0 mm; same data as holotype. UF 181419, 4 paratypes, 36.3–44.6 mm; same locality as holotype, 5 Dec. 2009. UF 181157, 1 paratype, 28.8 mm; Thong Pha Phum, Kwai Noi River system, Pakkok River system, Ban Huay Pousa, 14°38'0"N, 98°48'0"E, 20 Apr. 2011. UF 181420, 4 paratypes, 42.6–45.9 mm; Thong Pha Phum, Mae Khlong basin, Kwai Noi River system, Pracham Mai River, 26 Oct. 2010. Burapha Univ. uncat., 8 ex., 32.0–43.8 mm; Thong Pha Phum, Kwai Noi River system, Pakkok River, 14°36'52"N, 98°27'53"E, 4 Dec. 2009.

Schistura xhatensis: LAOS: LOUANGPHABANG PROV.: ZRC 45388, holotype, 33.0 mm, Nam Xhat, upstream of Ban Nam Sa; 20°06'43"N, 103°19'56"E, 12 May 1999. ZRC 45389, paratype, 36.3 mm; same data as holotype.

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